

Spot Safety Project Evaluation

Project Log # 200512212

Spot Safety Project # 11-97-210

Spot Safety Project Evaluation of the Installation of “Trucks Entering Highway” Warning Signs With Flashers and the Widening of the Crossover on US 52 Bypass At Neighbors Truck Stop Surry County

Documents Prepared By:

Safety Evaluation Group
Traffic Safety Systems Management Section
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Principal Investigator

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9/5/2006
Date

Spot Safety Project Evaluation Documentation

Subject Location

Evaluation of Spot Safety Project Number 11-97-210 – US 52 Bypass at Neighbors Truck Stop located approximately 0.5 miles north of US 52 Business in Surry County.

Project Information and Background from the Project File Folder

The spot safety project improvement countermeasures chosen for the subject location was the installation of “Trucks Entering Highway” warning signs with flashers and the widening of the crossover. US 52 Bypass is a 4-lane divided facility at the subject location with a speed limit of 55 mph. The crossover is located across from the Neighbors Truck Stop entrance/exit.

The median crossover serves a truck stop that is located on the west side of US 52 Bypass. Due to the high volume of traffic on US 52, trucks headed north from the truck stop were unable to cross the southbound lanes and enter the northbound lanes without stopping in the crossover. Because the median width was narrow (36'), trucks stopped in the crossover could not completely clear the southbound lanes. As part of the project, the northbound lanes were widened to provide a storage/acceleration lane.

The subject location was initially investigated due to a fatal accident occurring at the crossover. The accident occurred at night and involved a southbound vehicle striking the trailer of a truck that was stopped in the median with its trailer in the southbound lane. After the fatality, a local newspaper ran an article criticizing the DOT for not having signs warning of the potential danger of this crossover.

The initial crash analysis was conducted from January 1, 1992 to June 1, 1997, which included 12 crashes; 6 Angle Crashes, 2 Ran-Off-Roadway Crashes related to drivers avoiding angle collisions, 2 Rear-End Crashes, 1 Left Turn-Same Roadway Crash, and 1 Right Turn-Same Roadway Crash.

The final completion date for the improvement at the subject intersection was on May 15, 1998 with a total cost of \$50,000.00. The flashers were removed on March 31, 2006 due to the completion of nearby I-74, which presumably would carry much of the truck traffic.

Naive Before and After Analysis

After reviewing the spot safety project file folder along with all the crashes at the subject location, the crash data omitted from this analysis to consider for an adequate construction period was from March 1, 1998 through July 31, 1998. The before period consisted of reported crashes from July 1, 1990 through February 28, 1998 (7 years, 8 months) and the after period consisted of reported crashes from August 1, 1998 through March 31, 2006 (7 years, 8 months). The ending date for this analysis was determined by the deactivation of the warning flashers.

The treatment data consisted of all crashes within 150 feet from the subject crossover. *Please see attached location map and aerial photo for further details.*

The following data table depicts the Naive Before and After Analysis for the treatment location. Please note that the target crashes were broken into two categories. The first category was Angle Crashes involving trucks waiting in the crossover. The second category was Left Turn, Different Roadway Crashes involving vehicles leaving Neighbors and turning northbound on US 52 Bypass.

Treatment Information			
	Before	After	Percent Reduction (-) Percent Increase (+)
Total crashes	18	9	-50.0
Total Severity Index	16.51	6.76	-59.1
Target Crashes I (Trucks)	2	0	-100.0
Target Crashes Severity Index I	42.6	0	-100.0
Target Crashes II (Left Turns)	3	0	-100.0
Target Crashes Severity Index II	3.47	0	-100.0
Volume	21,100	15,500	-26.5

Injury Summary			
	Before	After	Percent Reduction (-) Percent Increase (+)
Fatal Injuries	1	0	-100.0
Class A Injuries	2	0	-100.0
Class B Injuries	1	5	400.0
Class C Injuries	18	8	-55.6
Total Non-Fatal	21	13	-38.1
Total Injuries	22	13	-40.9

The naive before and after analysis at the treatment location resulted in a 50 percent decrease in Total Crashes, a 59 percent decrease in the Total Severity Index, a 100 percent decrease in Type I Target Crashes, and a 100 percent decrease Type II Target Crashes. The before period ADT year was 1994 and the after period ADT year was 2002.

Results and Discussion

The naive before and after analysis involving the comparison of treatment actual before data versus treatment actual after data resulted in a 50 percent decrease in Total Crashes, a 100 percent decrease in Angle Crashes involving trucks stopped in the crossover, and a 100 percent decrease in Left

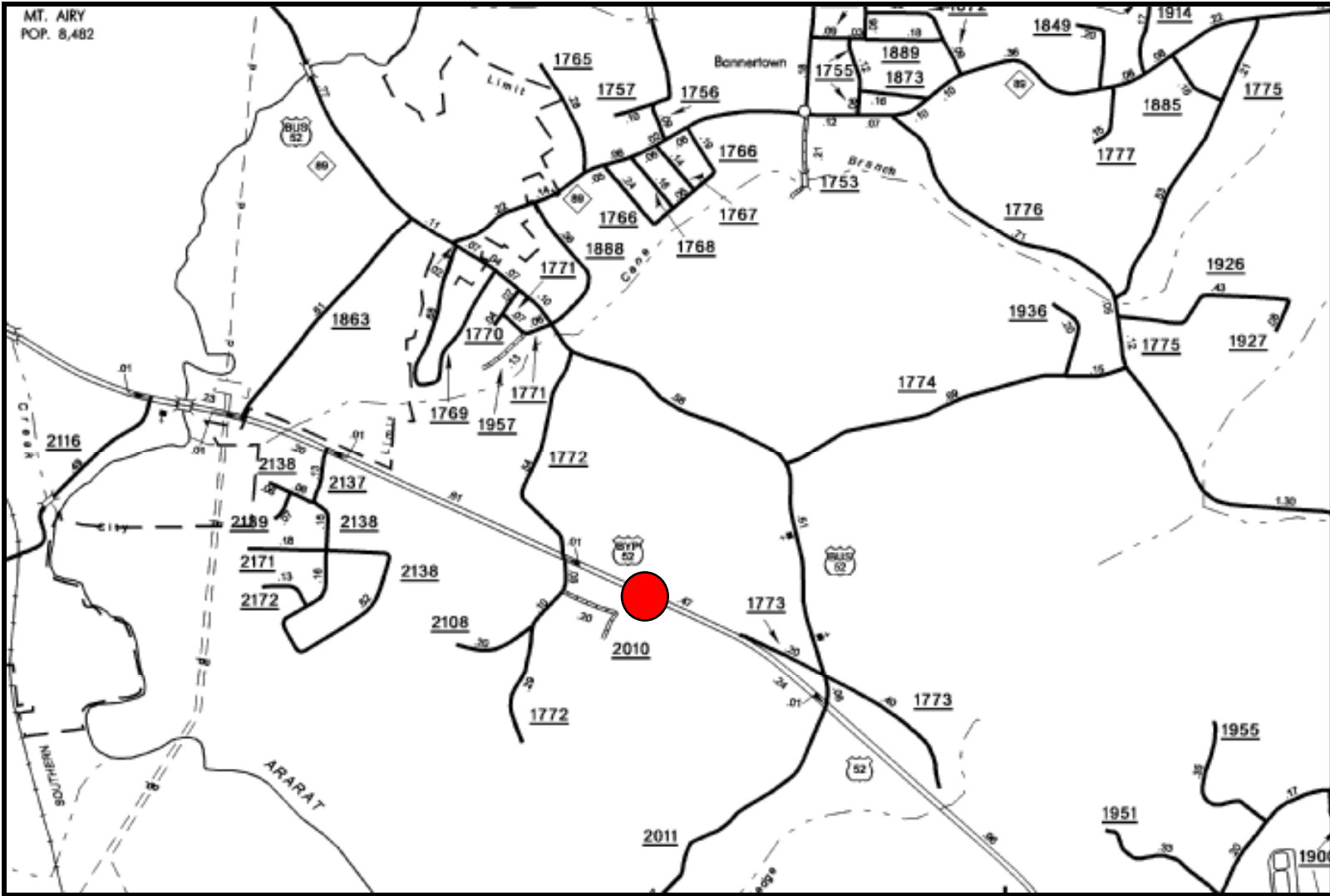
Turn-Different Roadway Crashes. The total severity index decreased 59 percent and the ADT decreased 27 percent. The summary results above demonstrate that the treatment location appears to have had a decrease in both Total Crashes and Target Crashes from the before to the after period.

Referencing the *Collision Diagrams* and the previous tables, it appears that the widening of the crossover in addition to the installation of the warning signs helped eliminate crashes involving trucks waiting to turn left in the crossover. In the before period there were two of these crashes, resulting in one fatality and one “C” injury. In the after period there were no crashes involving trucks waiting in the crossover.

Again referencing the *Collision Diagrams* and the previous tables, it appears the widening of the median and the addition of the storage/acceleration lane on northbound US 52 Bypass helped eliminate the pattern of Left Turn-Different Roadway Crashes. In the before period there were three crashes of this type, and in the after period there were none. The addition of the storage/acceleration lane did not appear to create any new crash pattern, although there was one Sideswipe-Same Direction Crash involving a vehicle attempting to merge from the acceleration lane onto northbound US 52 Bypass. The crash report does not state if this vehicle had turned left from the truck stop or had made some other type of maneuver.

As the Safety Evaluation Group completes additional spot safety reviews for this type of countermeasure, we will be able to provide objective and definite information regarding actual crash reduction factors for this type of intersection.

Evaluation of Spot Safety Project #11-97-210

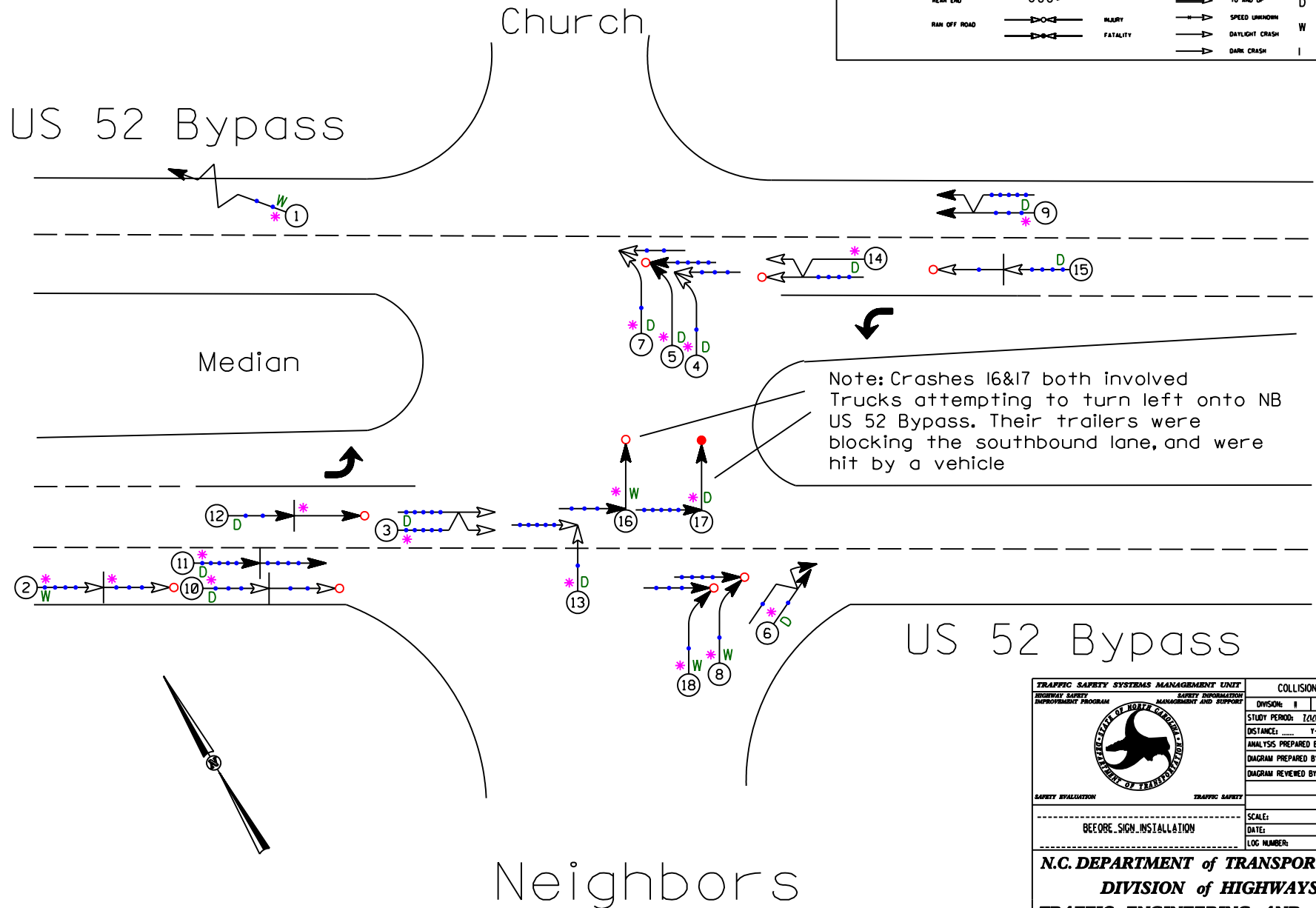
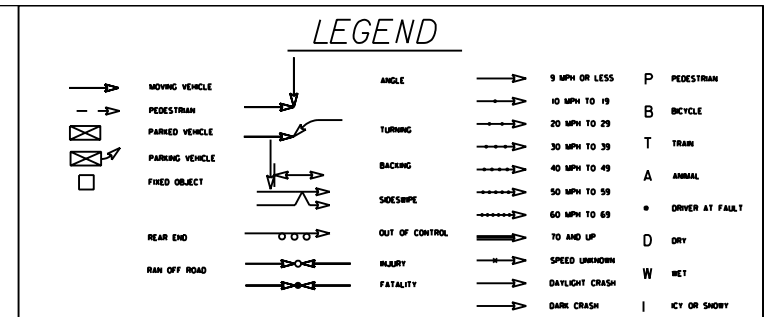



Treatment Site Location: Across From Neighbors Truck Stop. Approximately 0.5 miles north US 52 Business

Overhead Photo From Surry County Website



Surry County
 US 52 Bypass at Neighbors Truck Stop
 Approximately .5 miles north of US 52B
 Treatment Site in the Before Period
 From July 1, 1990 to February 28, 1998



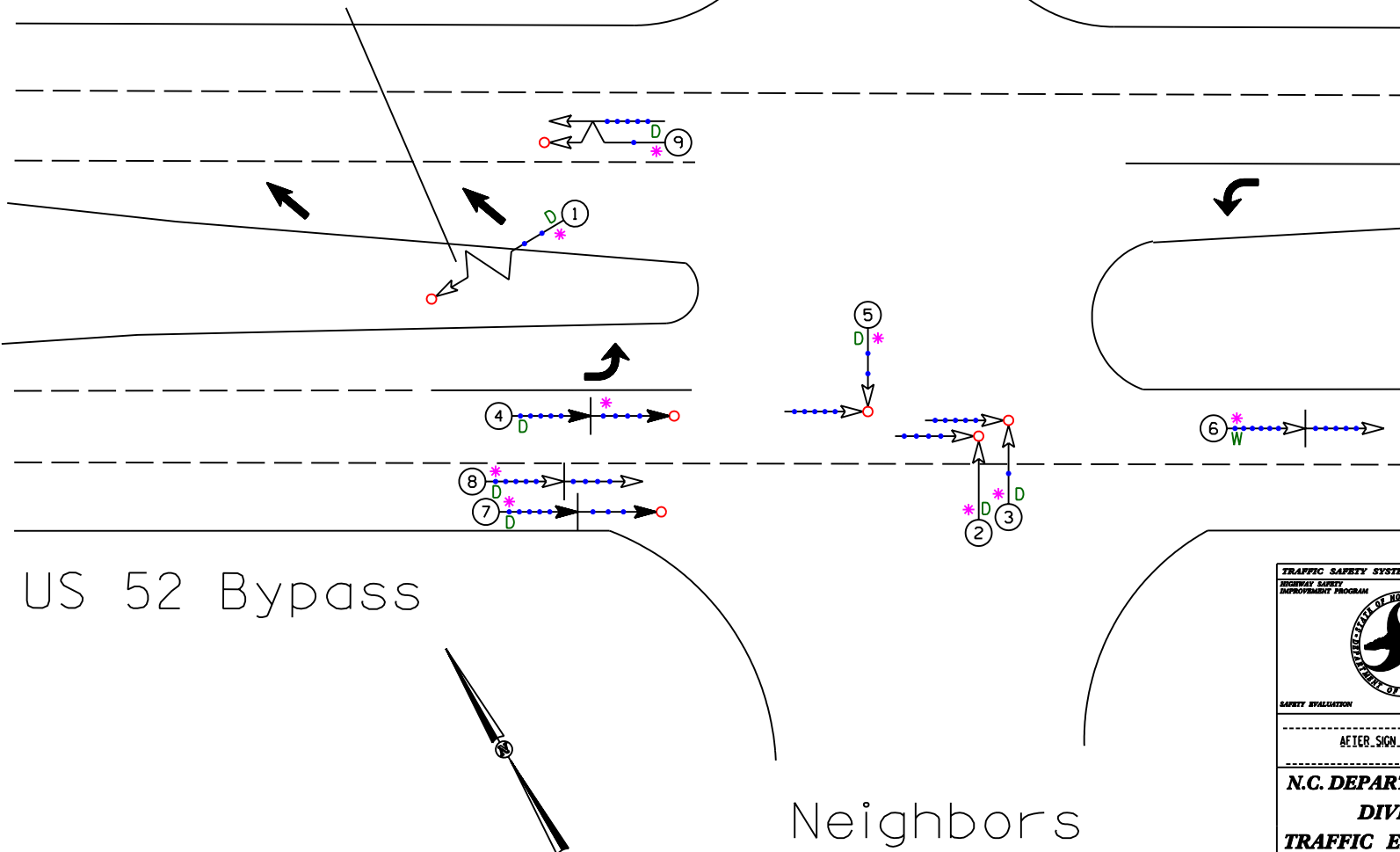
TRAFFIC SAFETY SYSTEMS MANAGEMENT UNIT		COLLISION DIAGRAM	
ROADWAY SAFETY IMPROVEMENT PROGRAM		DIVISION: 8	AREA: ..
		STUDY PERIOD: 7/1/1990 TO 2/28/1998	
		DISTANCE: T-MILE: 60 FT	
		ANALYSIS PREPARED BY: B. Bobbitt	
		DIAGRAM PREPARED BY: B. Bobbitt	
		DIAGRAM REVIEWED BY:	
SAFETY EVALUATION		TRAFFIC SAFETY	
BEFORE SIGN INSTALLATION		SCALE: NOT TO SCALE	
		DATE: July 2006	
		LOG NUMBER: 20050202	
N.C. DEPARTMENT of TRANSPORTATION DIVISION of HIGHWAYS TRAFFIC ENGINEERING AND SAFETY SYSTEMS BRANCH			

Surry County
US 52 Bypass at Neighbors Truck Stop
Approximately .5 miles north of US 52B
Treatment Site in the After Period
From August 1, 1998 to March 31, 2006

Church

US 52 Bypass

Note: Driver had seizure
and ran off roadway



LEGEND

	MOVING VEHICLE		ANGLE		9 MPH OR LESS		P PEDESTRIAN
	PEDESTRIAN		TURNING		10 MPH TO 19		B BICYCLE
	PAKED VEHICLE		BACKING		20 MPH TO 29		T TRAIN
	PARKING VEHICLE		SIDESWIPE		30 MPH TO 39		A ANIMAL
	FIXED OBJECT		OUT OF CONTROL		40 MPH TO 49		* DRIVER AT FAULT
	HEAD ON		HALT		50 MPH TO 59		D DRY
	REAR END		HALT		60 MPH TO 69		W WET
	RAN OFF ROAD		HALT		70 AND UP		Dark CRASH
			HALT		SPEED UNKNOWN		KEY OR SHADOW
			HALT		DAYLIGHT CRASH		
			HALT		DARK CRASH		

TRAFFIC SAFETY SYSTEMS MANAGEMENT UNIT		COLLISION DIAGRAM	
HIGHWAY SAFETY IMPROVEMENT PROGRAM		SAFETY INFORMATION MANAGEMENT AND SUPPORT	
		DIVISION: 8	AREA: ..
		STUDY PERIOD: 8/1/1998 TO 3/31/2006	
		DISTANCE: T-LINE: 60 FT	
		ANALYSIS PREPARED BY: B.Boobosoo	
		DIAGRAM PREPARED BY: B.Boobosoo	
DIAGRAM REVIEWED BY:			
SAFETY EVALUATION		TRAFFIC SAFETY	
AFTER SIGN INSTALLATION		SCALE: NOT TO SCALE	
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